

# JAPAN

## EDICT OF GOVERNMENT

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JIS B 6543 (1991) (English): Veneer knife  
grinders -- Test and inspection methods

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*The citizens of a nation must  
honor the laws of the land.*

Fukuzawa Yukichi

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# JIS

**JAPANESE INDUSTRIAL STANDARD**

**Veneer knife grinders —  
Test and inspection methods**

**JIS B 6543**<sup>—1991</sup>

**Translated and Published**

**by**

**Japanese Standards Association**

In the event of any doubt arising,  
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## JAPANESE INDUSTRIAL STANDARD

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Veneer knife grinders -  
Test and inspection methods

B 6543-1991

1. Scope

This Japanese Industrial Standard specifies the test methods for function, running performance and rigidity, and the inspection methods for static accuracy and machining accuracy of veneer knife grinders with a tool fitting surface of length not less than 2000 mm up to not more than 5800 mm.

Remarks 1. Veneer knife grinder is the machine which makes grind finishing by reciprocating movement of the rotating grinder over the whole range of tip length of the cutter fixed on the tool fitting stand.

It is used mainly for grinding the cutter for veneer lathe, slicer and clipper (see JIS B 0114).

## 2. Applicable standards to this Standard are as follows:

JIS B 0114-Glossary of terms for wood working machinery.

JIS B 6507-General code of safety for wood working machinery.

JIS B 6521-Methods of measurement for noise emitted by wood working machinery.

JIS R 6210-Vitrified grinding wheels.

## 3. The units and numerical values given in { } in this Standard are based on the traditional units and are given for reference.

## 2. Function inspection methods

The function test on veneer knife grinders shall comply with Table 1.

Table 1. Function test

No.	Test items	Test method
1	Electric device	Test insulation condition once each before and after running test.
2	Fitting and removal of wheel	Test smoothness and positiveness for fitting and removal of wheel, and fastening of screw.
3	Swing angle <sup>(1)</sup> adjusting device of wheel	Test smoothness of operation and exactness of indication in adjusting device for swing angle of wheel.
4	Starting, stopping and running of wheel	Let wheel spindle run about 10 times and test positiveness of operation and number of revolution.
5	Fitting and removal of veneer knife	Test smoothness and positiveness for fitting and removal of tool fitting and fastening of screw.
6	Rotating device of tool fitting stand	Rotate tool fitting stand and test smoothness of operation and exactness of indication.
7	Feeding device in depth of cut of wheel	Test smoothness of operation for feeding in depth of cut of wheel and exactness of indication.
8	Starting, stopping and running of wheel fitting stand	Let wheel fitting stand run reciprocally about 10 times and test the functional smoothness and uniformity for whole length of movement.
9	Cutting fluid supplying device	Let cutting fluid supplying device work and test positiveness of its function.
10	Dust proof device of sliding surface	Test functional smoothness and positiveness.
11	Feed direction changing device of wheel fitting stand	Test functional smoothness and positiveness.
12	Safety device	Test functional smoothness and positiveness for worker's safety device and machine protective device. (See JIS B 6507)
13	Lubricating device	Test functional smoothness and positiveness such as oil tightness and adequate supply of oil.
14	Accessory device	Test functional smoothness and positiveness.

Note <sup>(1)</sup> It is called "run out angle" as well.

Remarks: Those not equipped with the said function in accordance with type may be omitted from the test on the corresponding item in Table 1.

### 3. Running Test Methods

**3.1 No load running test** No load running test shall be that let the wheel rotate, continue the reciprocating motion of wheel stand for 30 to 60 minutes and observe the required power and the noise after stabilization of bearing temperature, fill in each item specified in Record Form 1 in Table 2, and observe by feeling not to have abnormal vibration.

Measurement of noise shall be in accordance with JIS B 6521.

Table 2. Record form 1

No.	Time of measurement (h.min)	Rotational speed of wheel (rpm)		Rotational speed of tool fitting stand m/min	Temperature (°C)			Required power			Noise dB (A)	Description
		Marked	Measure		Bearing		Room temperature	Voltage V	Current A	Input kW		
					Front	Rear						

Remarks 1. For those with speed change gear for axis rotative speed, the rotational speed under two conditions, at least, including the maximum rotational speed shall be recorded.

2. Measuring condition of noise shall be written in the column of description.

**3.2 Load running test** Load running test shall be that grinding by veneer knife is carried out to measure the required power and the noise so that each item specified in Record Form 2 in Table 3 is filled in and it is observed by feeling not to have abnormal vibration, and check the condition of the ground surface.

Measurement of the required power shall be carried out in testing under the condition that the depth of cut is changed at the fixed speed or that feeding speed is changed at the fixed depth of cut.

Measurement of noise shall be carried out in accordance with JIS B 6521.



Table 3. Record form 2

No.	Veneer knife			Wheel			Grinding condition							Required power					Noise  dB (A)	Description							
	Dimension		Material	Dimension		Practical maximum peripheral speed  $v$ (m/min)	Material (2)	Grain size	Grinding direction	Tip height (3)	Tool angle for grinding	Wheel swing angle  Rotation speed of wheel  $n$ (rpm)	Feeding speed  $f$ (mm/min)	Depth of cut (4)	Cutting fluid		Voltage  V	Current  A			Input		Grinding power  $P_1 - P_0$ kW				
	Length  $L$ (mm)	Width  $B$ (mm)		Thickness  $H$ (mm)	Tool tip										Base	Outer dia.  $\phi$ (mm)					Thickness  $\delta$ (mm)	Edge thickness  $e$ (mm)		Material	Quantity  $q$ (l/min)	No load  $P_0$ (kW)	Load  $P_1$ (kW)

Notes (2) It shall comply with the indication specified in JIS R 6210.

(3) Tool tip height means the vertical distance between the tool tip and the wheel center.

[The case where the tool tip is higher than the wheel center shall be signed as (+), lower (-).]

(4) Depth of cut in this case, the feeding quantity of wheel shall be recorded.

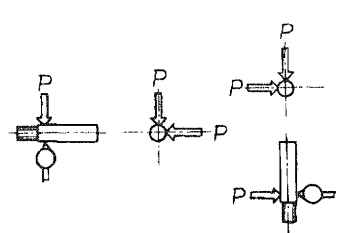
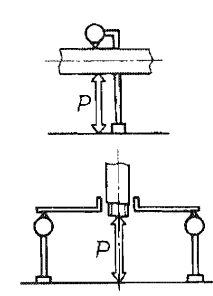
Remarks 1. Measuring condition of noise shall be written in the column of Description.

2. Shape of the wheel shall be illustrated together with the main dimension.

#### 4. Rigidity test method

The rigidity test of the veneer knife grinders shall be carried out in accordance with Table 4.

Table 4. Rigidity test

No.	Test item	Measuring method	Illustration for measuring method
1	Bending rigidity of wheel spindle	<p>Apply the fixed test indicator to the wheel point (side surface) and apply the load (<math>P</math>) perpendicular direction to the wheel spindle<sup>(5)</sup> to measure the deflection of wheel spindle.</p> <p>This measurement is carried out applying the load in two directions making <math>90^\circ</math> to each other.</p>	
2	Combined rigidity of wheel spindle and tool fitting surface	<p>Apply the test indicator fixed on the tool fitting surface to the wheel spindle and apply the load (<math>P</math>) in vertical direction between wheel spindle and tool fitting surface<sup>(5)</sup> to measure the relative displacement between wheel spindle and tool fitting surface.</p> <p>This measurement, in the case where the load direction crosses the wheel spindle orthogonally, is made at the middle of tool fitting surface, and in the case where in parallel, at the tip side of the tool fitting surface.</p>	

Note <sup>(5)</sup> The position to which the load is applied should be the position near the end of wheel spindle as far as possible and the distance from the fixed end of the wheel spindle shall be recorded..

- Remarks 1. The rigidity test of the machine based on the same design, can be represented by the test result from the typical one and be omitted for the rest.
2. As to the load ( $P$ ), the value the manufacturer recommends shall be recorded.
3. This measurement shall be made after rotating the wheel spindle to stabilize the temperature of the bearing.

### 5. Static accuracy inspection method

Static accuracy inspection method shall be carried out in accordance with Table 5.

Table 5. Static accuracy inspection

Unit: mm

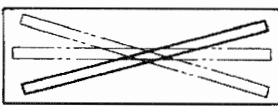
No.	Inspection item	Measuring method	Illustration for measuring methods	Tolerance
1	Straightness of sliding surface of bed	Longitudinal direction <sup>(6)</sup>	Place a precision level on the sliding surface of bed <sup>(7)</sup> , read the precision level at least for every 1000 mm and consider the maximum difference to be the measured value.	0.04/m
		Lateral direction <sup>(6)</sup>	Place a precision level on the straightedge, riding over both sliding surfaces of bed, consider the maximum difference in readings by the precision level at least on three positions of the middle part and both ends as the measured value.	0.04/m
2	Straightness of tool fitting surface	Put a straightedge to the upper surface of the tool fitting surface in parallel and diagonally respectively to the sliding surface, measure the clearance with a feeler gauge and consider the maximum value to be the measured value <sup>(8)</sup> .		0.03 per 1000

Table 5. (Continued)

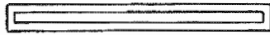
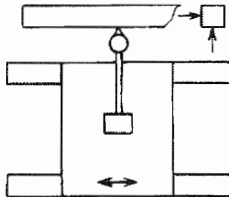
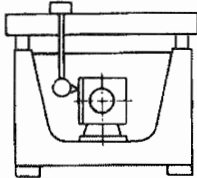
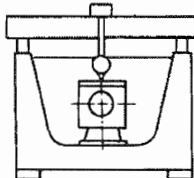
No.	Inspection item	Measuring method	Illustration for measuring methods	Tolerance
3	Straightness of side surface of tool fitting stand	Put a straightedge to the side surface of tool fitting stand, measure the clearance with a feeler gauge and consider the maximum value to be the measured value <sup>(9)</sup> .		0.03 per 1000
4	Straightness of reciprocating movement of wheel fitting stand	In vertical plane		0.03 per 1000
		In horizontal plane		0.03 per 1000
5	Parallelism between reciprocating movement of wheel fitting stand and tool fitting surface	In vertical plane		0.04 per 1000
		In horizontal plane		0.04 per 1000

Table 5. (Continued)

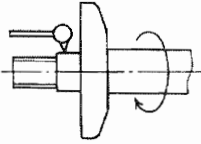
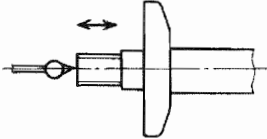
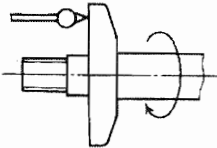
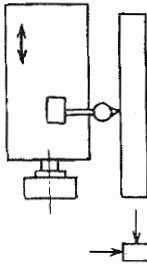
No.	Inspection item	Measuring method	Illustration for measuring methods	Tolerance
6	Deflection of wheel spindle	Put a fixed test indicator to the outer surface of the wheel fitting part, rotate the wheel spindle by hand and consider the maximum difference in readings by the test indicator during rotation to be the measured value.		0.02
7	Axial movement of wheel spindle	Put a fixed test indicator to the end surface of the wheel spindle, shake the wheel spindle in the axial direction <sup>(11)</sup> and consider the maximum difference in readings to be the measured value.		0.02
8	Deflection of flange surface of wheel spindle	Put a fixed test indicator to the flange surface, rotate the wheel spindle with hand and consider the maximum difference in readings by the test indicator during rotation to be the measured value.		0.03 per dia. 100

Table 5. (Continued)

No.	Inspection item		Measuring method	Illustration for measuring methods	Tolerance
9	Straightness of wheel feeding movement in depth of cut	In vertical plane	Put a test indicator fixed on the bearing box of the wheel spindle to the straightedge <sup>(12)</sup> (e.g. placed on the bed), give the feeding movement in depth of cut to the wheel and consider the maximum difference in readings by the test indicator throughout the whole travelling length to be the measured value.		0.02
		In horizontal plane			0.02

Notes (6) Longitudinal direction of bed means the direction of long dimension and the direction at right angle to the same is called the lateral direction.

(7) In the case where sliding surface of bed has a V-shaped groove, the measurement shall be carried out by using a test bar and putting a precision level on the test bar.

(8) In the case where a straightedge is shorter than tool fitting surface, the measurement shall be carried out throughout the whole length of the tool fitting surface by moving the position of the straightedge successively.

(9) In the case where a straightedge is shorter than the side surface of tool fitting stand, the measurement shall be carried out throughout the whole length of the side surface of tool fitting stand by moving the position of straightedge successively.

(10) Straightedge shall be adjusted so as to let the readings of test indicator coincide with each other at both ends of the moved distance on the tool fitting surface.

(11) The force to shake in the axial direction shall be approximately 150 N (approx. 15 kgf).

(12) Straightedge shall be adjusted so as to make the reading of test indicator coincide with each other at both ends of the moved distance (feeding movement for cutting) of wheel spindle.

Remarks: Those not equipped with the said function in accordance with the type, may be omitted from the inspection on the corresponding item in Table 5.

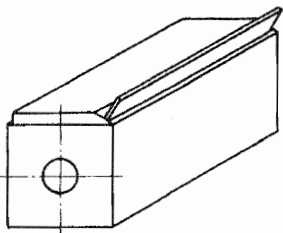


6. Machining accuracy inspection method

The machining accuracy inspections shall comply with Table 6.

Table 6. Machining accuracy inspection

Unit: mm

No.	Inspection item	Measuring method	Illustration for measuring methods	Tolerance
1	straightness ground surface	Grind a tool of the length suitable for the nominal dimension of machine, put a straightedge to the ground surface fitted as it stands on the tool fitting stand in parallel to the tool tip, measure the clearance with feeler gauge and consider the maximum value to be the measured value.		0.02 per 1000

Reference Standards:

JIS B 6501-Test Code for Performance and Accuracy of Wood Working Machinery

JIS R 6004-Glossary of Terms and Marks Used in Abrasive, Grinding Wheel and Coated Abrasive

JIS R 6111-Artificial Abrasives

JIS R 6211-Shapes and Dimensions of Grinding Wheels

JIS R 6241-Maximum Operating Speed of Grinding Wheels

JIS Z 8203-SI Units and the Use of Their Multiples and of Certain Other Units



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